

What is claimed is:

1. A solder ball assembly for use in the formation of solder bumps comprising a heat-resisting sheet having a plurality of holes, a solder ball disposed in each hole, and an adherent layer disposed within the sheet, the adherent layer being exposed to the interior of each hole in such a manner that the adherent layer contacts and holds the solder ball in the hole.

2. A solder ball assembly as claimed in claim 1 wherein the heat-resisting sheet comprises a material selected from the group consisting of resins, metals, ceramics, paper, and combinations of two or more of these materials.

3. A solder ball assembly as claimed in claim 1 wherein the adherent layer is exposed to the interior of each hole on a wall of the hole.

4. A solder ball assembly as claimed in claim 1 wherein each hole has a bottom surface and the adherent layer is exposed to the interior of the hole on the bottom surface of the hole.

5. A solder ball assembly as claimed in claim 1 wherein each hole is straight and has a wall extending perpendicularly to a surface of the heat-resisting sheet.

6. A solder ball assembly as claimed in claim 1 wherein each hole is tapered and has a diameter which gradually decreases toward a bottom of the hole.

7. A solder ball assembly as claimed in claim 1 wherein each hole is a blind hole.

8. A solder ball assembly as claimed in claim 7 wherein the depth of each blind hole is at least one third the diameter but smaller than the diameter of the solder ball disposed therein.

9. A solder ball assembly as claimed in claim 7 wherein the depth of each blind hole is at least one half the diameter but smaller than the diameter of the solder ball disposed therein.

10. A solder ball assembly as claimed in claim 1 which further comprises a covering placed atop the heat-resisting sheet to cover the solder balls disposed in the holes.

11. A method for manufacturing a solder ball assembly for bump formation comprising laminating a first and a second heat-resisting sheet with an adherent layer disposed between the two heat-resisting sheets to form a multilayered heat-resisting sheet having the adherent layer within the multilayered sheet, forming holes each having a diameter sufficient for the hole to

allow a solder ball to enter therein and a depth sufficient for the hole to reach or pass through the adherent layer whereby the adherent layer is exposed to the interior of each hole, and placing a solder ball into each hole in contact with the adherent layer to hold the solder ball in the hole by contact with the adherent layer.

12. A method as claimed in claim 11 including forming the holes by laser beam machining.

13. A method as claimed in claim 11 including covering the solder balls disposed in the holes with a covering.

14. A method as claimed in claim 11 wherein the holes are blind holes.

15. A method for manufacturing a solder ball assembly for bump formation comprising forming through-holes in a first heat-resisting sheet, each through-hole having a diameter sufficient for the through-hole to receive a solder ball, laminating the first heat-resisting sheet to a second heat-resisting sheet with an adherent layer disposed therebetween to form a multilayered heat-resisting sheet having holes, each hole having a bottom surface formed by the adherent layer which is exposed to the interior of the hole, and placing a solder ball into each hole to hold the solder ball in the hole by contact with the adherent layer.

16. A method as claimed in claim 15 including forming the through-holes in the first heat-resisting sheet by laser beam machining.

17. A method as claimed in claim 15 including covering the solder balls disposed in the holes with a covering.

18. A method for forming solder bumps on electrodes of a substrate comprising placing a solder ball assembly as claimed in claim 1 upside down on a substrate having a plurality of electrodes with each electrode aligned with one of the holes in the solder ball assembly, heating the substrate and the solder ball assembly to melt the solder balls and transform them within the holes in the solder ball assembly into solder bumps attached to the electrodes, and removing the heat-resisting sheet of the solder ball assembly from the substrate.

19. A sheet for use in forming solder bumps on a substrate having a plurality of electrodes, comprising a heat-resisting sheet having a plurality of holes arranged in the same pattern as the electrodes of a substrate, each hole being capable of receiving a solder ball therein, and an adherent layer disposed within the sheet, the adherent layer being exposed to the interior of each hole in such a manner that when a solder ball is disposed in the hole, the adherent layer contacts and holds the solder ball in the hole.